116 Effect of nebulised antibiotics on *Aspergillus* colonisation and complications

C. Lumb[1], P. Whitaker[1], K. Williams[1], K. Pollard[1], C. Etherington[1], S. Conway[1], D. Peckham[1]. [1]*Regional Adult CF Unit, St James's Hospital, Leeds, United Kingdom*

Nebulised antibiotics are associated with increased *Aspergillus* colonisation. It is not known whether this effect leads to increased *Aspergillus* antibodies or more frequent use of anti-fungal medication. Recent in-vitro data also suggests that colomycin may have fungicidal properties.
We reviewed 129 adult patients classified as chronically colonised with *Pseudomonas*. Patients were receiving either long-term nebulised colomycin, nebulised tobramycin, or no antibiotic (Table 1). Patients not receiving nebulised antibiotics had lower *Aspergillus* positivity in sputum ($p = 0.003$) and lower specific *Aspergillus* IgE levels ($p = 0.001$). There was a trend to lower total IgE and use of anti-fungal medication. No significant differences were seen between the colomycin and tobramycin groups aside from the colomycin group received less anti-fungal medication ($p = 0.03$).

Table 1. Effects of nebulised antibiotics

	Tobramycin (n = 30)	Colomycin (n = 76)	No antibiotic (n = 23)
Age	29 (20–44)	30 (18–69)	28 (18–42)
Predicted FEV1 (%)	60 (30–96)	58 (8–127)	61 (24–99)
Total IgE (ku/l)	243 (4–1213)	168 (0–1614)	109 (6–773)
Specific IgE to *Aspergillus* (kua/l)	8.30 (0–56)	4.71 (0–62.6)	1.47 (0–5.35)*
Aspergillus IgG (mgA/l)	77.5 (15.7–200)	83.8 (6.6–201)	71.6 (2.7–201)
Use of antifungal in previous 12 months	63%*	39%	39%
Percentage sputum positivity for *Aspergillus*	8.4%	13.7%	5.9%*

This data supports the finding of increased colonisation in patients on nebulised antibiotics. We also observed increased *Aspergillus* antibodies in this group. These effects are likely due to the counterbalance between *Pseudomonas* and *Aspergillus*, by reducing *Pseudomonas* load *Aspergillus* can proliferate. Contamination of nebuliser systems with *Aspergillus* is reported to be uncommon. Whether colomycin confers any advantage is unclear.

117 Results of an on-line survey of cystic fibrosis microbiology practices in UK laboratories

M. Denton[1], C. Doherty[2], J. Foweraker[3], J. Govan[2], M. Hall[1], B. Isalska[4], A. Jones[4], D. Kenna[5], D. Wareham[6]. [1]*Leeds General Infirmary, Leeds, United Kingdom;* [2]*University of Edinburgh, Edinburgh, United Kingdom;* [3]*Papworth Hospital, Cambridge, United Kingdom;* [4]*Wythenshawe Hospital, Manchester, United Kingdom;* [5]*Centre for Infections, HPA Colindale, London, United Kingdom;* [6]*Barts and the London NHS Trust, London, United Kingdom*

Objective: To evaluate current CF microbiology practice in UK laboratories.
Methods: Invitations were sent out to 81 microbiology laboratories providing support to CF Centres/Clinics in the UK to participate in an on-line survey. Participants answered questions on methods for processing CF respiratory samples, including homogenisation, microscopy, culture, identification, susceptibility testing, use of reference laboratories, and communication of results to CF clinicians.
Results: 35 (43%) laboratories participated. Only 45% diluted sputum whilst 91% reported the number of micro-organisms present (mostly semi-quantitation). Although 97% of laboratories used selective media to isolate *Burkholderia cepacia* complex (Bcc), only 77%, 66% and 34% used selective media for fungi, *S. aureus* and *P. aeruginosa*, respectively. Most used molecular methods to confirm identity of Bcc and other CF-associated pathogens; only three used in-house methods, but most used the national reference laboratory. Of concern, four laboratories (12%) did not use molecular identification methods. Disc diffusion was the most common susceptibility testing method (89% of laboratories), but there was considerable variability in how colonies were selected for testing. Microbiologists in 11 centres (31%) attended multi-disciplinary team meetings, but in six of these it was only four times a year or less.
Conclusion: A wide variability in practice was observed in UK microbiology laboratories when processing CF respiratory samples. In September 2010 the UK CF Trust published evidence-based guidelines for microbiology laboratories processing CF respiratory samples. A future audit is planned to assess their impact.

118* Microbial diversity in the cystic fibrosis lung – assessing the limitations of current diagnostic microbiology and antibiotic susceptibility profiling

S.E. Darch[1], S.A. Crusz[1], D. Forrester[1], A. Smyth[2], A. Fogarty[3], S.P. Diggle[1]. [1]*School of Molecular Medical Sciences, Nottingham, United Kingdom;* [2]*Division of Child Health, Clinical Sciences Building, City Hospital, Nottingham, United Kingdom;* [3]*Division of Epidemiology and Public Health, University of Nottingham, Clinical Sciences Building, City Hospital, Nottingham, United Kingdom*

Introduction: The Cystic Fibrosis (CF) lung presents a complex polymicrobial ecology. One of the most commonly associated pathogens is *Pseudomonas aeruginosa*. This pathogen is capable of sustaining a chronic infection via formation of multicellular structures known as biofilms, making infection extremely difficult to treat with conventional antibiotic therapy. Routine antibiotic susceptibility testing of strains relies on the testing of a single 'morphotype' planktonically.
Methods: We tested 44 morphotypically identical *P. aeruginosa* colonies taken from a single sputum sample. Our aim was to test whether phenotypic and antibiotic susceptibility profiles differ between identical morphotypes, if so, does testing a single colony provide accurate information for the clinician? Phenotypic assays were performed including growth and pyocyanin production. Using the 'Peg Biofilm Assay' colonies were tested for susceptibility to common CF therapeutics in the planktonic and biofilm modes of growth, both singly and in combination in order to compare susceptibility profiles of these combinations with the regularly used laboratory method.
Results: Initial phenotypic analysis has demonstrated large variances in both population growth and pyocyanin production between colonies, despite all being morphologically identical. We will report our findings on biofilm formation and antibiotic susceptibilities.
Discussion: We demonstrate that morphologically identical colonies can display huge phenotypic differences, which suggests that analysing several colonies of the same morphotype will provide a more accurate method for determining the antibiotic sensitivity of *P. aeruginosa* in the CF lung.

119 Audit review of the microbiology results of cystic fibrosis patients attending a tertiary centre clinic

V. Dhawan[1], R. Aniapravan[1], L. Thannikel[1], D. McShane[1]. [1]*Cambridge University Hospital NHS Trust, Cambridge, United Kingdom*

Introduction: An audit of the microbiology results of patients attending the CF clinic at a Tertiary Hospital in UK over 1 year period was conducted in 2005 and microbiology results were reviewed using the Hospital web system. The information with regards to the type of sample taken, organisms cultured, sensitivities of organisms to antibiotics, typing of *Pseudomonas* and macroscopic appearance of these specimens was audited. The study highlighted important facts in the reporting like only 1 specimen of the 44 *Pseudomonas* was reported as being mucoid with no comments on the others. Only 14% *Pseudomonas* were reported as *aeruginosa* and 86% reported as species. The *Pseudomonas* routinely had only 6 drugs tested for sensitivity omitting important drugs like colistin. There was recommended practice change suggested after a MDT with Microbiologist and the CF team and a repeat audit of the same was done in 2010 over a 1 year period on a similar population attending CF clinic.
The audit in 2010 showed improvement in the practice with a increase in the *Pseudomonas* species being typed increasing to 86%. There was a 95% antibiotic sensitivity testing to 12 antibiotics commonly used in CF patients. There was still poor reporting of the *Pseudomonas aeruginosa* as mucoid or not. Though all patients coming to CF clinic are screened for *cepacia* there was only 3 positive results.
Conclusion: It is a good practice to re-evaluate the current practice, the audit in 2005 helped us to understand the flaws in reporting and was highlighted to the microbiologist and a change in practice noted. It improved our clinical management but there is still a long way to go to perfection but it is a start.